

## Table 1

PhageTech

Database

## Genome Sequence

&gt;sid|300001 Phage 77 Complete genome 41708 bases 16-10-1998

SEQ ID NO. 10

71	gatcaaaata	cttggggaac	ggtagggag	taaacttcgc	gataatttta	aaaattcatg	tataacco
141	ctcttataac	cattttaagg	caggtgatga	aatggagatt	atagtcgatg	aaaatttagt	gctttaaag
211	aaagaaggc	tacaagtatt	atataaagac	atacctagca	ataaattaaa	agtagttgat	ggtttaaa
281	ttcaagcagc	aaggctacgt	gtaatgcttg	attacatgtg	ggaagacata	aaagaaaaag	gtgattat
351	tttattttact	caatctgaaa	aggcgccacc	atatgaaagg	gaaagaccag	tagccaaact	atttaattg
421	agagatgctg	catatcaaaa	aataatcaaa	caattatcgg	atttattgcc	cgaagagaaa	gaagacac
491	aaacgccatc	tgatgattac	ctatgattag	taataaatat	gttgatgaat	atataaattt	gtggaaac
561	ggaaagataa	ttttaaataa	agaaagaatt	gatctcttta	attatctaca	aaaacatata	tattcacg
631	atgatgtata	ttttgatgaa	cagaaaatcg	aggattgtat	caaattttatt	gaaaaatggt	attttcca
701	attaccattt	caaagggttta	tcatagctaa	tatatctctt	atagataaaa	atacagatga	agctttct
771	acagaatttg	ctattttcat	gggacgtgga	ggcgggaaaa	acggtcta	aagtgtctatt	agtgtatt
841	tttctacgcc	cttacacgga	gttaaagaat	atcacatctc	cattgttgct	aatagtgaag	atcaagca
911	aacatcgttt	gatgaaatca	gaaccgtttt	aatggataac	aaacgaaata	agacgggtaa	aacgccaa
981	gctccttatg	aagttagtaa	agcaaaaaata	ataaacctgt	caactaaatc	ggttattcga	tataacac
1051	caaacacaaa	aaccaaagac	ggtagcgtg	aggggtgtgt	tatttttgat	gaaattcatt	atttcttt
1121	tcttgaaatg	gtaaacgtca	aacgtgggtg	attaggtaaa	aagaaaaata	gaagaacgtt	ttatataa
1191	actgatgggt	ttgttagaga	gggttatatc	gatgcaatga	agcacaaaat	tgcaagtgtg	tttaagtgg
1261	agggttaaaaa	tagtagattg	tttgcttttt	attgtaagtt	agacgatcca	aaagaagttg	atgacaga
1331	gacgtgggaa	aaggcgaacc	caatgtttaca	taaaccgtta	tcagaatacg	ctaaaacact	gctaagba
1401	attgaagaag	aataataacga	tttaccattc	aaccgttcaa	ataagcccga	attcatgact	aagcgaat
1471	atttgcttga	agttgacctt	gaaaaagtaa	tagcaccatg	gaaagaaata	ctagcgacta	atagagag
1541	acctaaattta	gataatcaaaa	tgtgtattgg	tgggttagac	tttgcaaaaca	ttcgagattt	tgcaagtg
1611	gggctattat	tccgaaaaaa	cgatgattac	atttggttag	gacattcggt	tgtaagacaa	gggttttt
1681	atgatgtcaa	attagaacct	cctattaaag	aatgggaaaa	aatgggatta	tgaccattg	tcgatgat
1751	tgctattgaa	attgaatata	tagttgattg	gttttttaaag	gctagagaaa	aatatgggct	tgaaaaag
1821	atagctgata	attatagaac	tgatattgta	agacgtgcgt	ttgaggatgc	tgccataaaa	cttgaagt
1891	ttagaaatcc	aaaagcaata	catggattac	ttgcaccacg	tatcgataca	atgtttgcga	aacataac
1961	aatatatgga	gacaatcctt	tgatgcgttg	gtttactaat	aatgttgctg	taaaaatcaa	gccggatg
2031	aataaaagag	atatcaaaaa	agatgaagtc	agacgtaaaa	cggatggatt	catggctttt	gttcaacg
2101	tatatagagc	agacgatata	gtagacaaag	acatgtctaa	agcgcttgat	gcattaatga	gtatagat
2171	ctaataagag	aggtgagaca	tgagtattct	agaaaagata	tttaaaacta	ggaaagatat	aacatata
2241	cttgatttag	atatgataga	agatctatca	caacaagcgt	atgtgaaacg	tttagcgatt	gatagttg
2311	ttgaatttgt	tgcgcgagct	gtcgctcaaa	gtcattttta	agtattggaa	ggtaatagaa	ttcaaaaag
2381	tgatgtttac	tacaagttaa	atataaaacc	aaatactgac	ttatcaagcg	atagtttttg	gcaacaag
2451	atatataaac	taatttatga	taacgaggtt	ttaatcgtag	taagtgcacg	caaagaatta	cttatcgc
2521	atagctttta	cagagaagag	tacgctttgt	atgatgatat	attcaaagat	gtaacggtta	aagattat
2591	ttatcaacgt	actttcacia	tgcaaggagg	catatattta	aagtacaaca	acaataaagt	gacacact
2661	gtagaaagtc	tattcgaaga	ttacgggaaa	atatctggaa	gaatgatagg	tgcaacaata	aaaaacta
2731	aaataagagg	gattttgaaa	ctgcctcta	gcgcatatga	cgaaaagaat	atagaaaaat	tacaagcg
2801	cacaaataaa	ttattcaata	cttttaataa	aaatcaacta	gcaatcgcg	ctttgataga	agggtttg
2871	tatgaggaat	tatctaattg	tggtagaagt	agtaacatgc	ctttttctga	attgagttag	ctaattgag
2941	atgcaataaa	aaatgttgcg	ttgatgattg	gtatacctcc	aggtttgatt	tacggagaaa	cagctgat
3011	ggaaaaaaac	acgcttgat	ttgagaagtt	ctgttttaaca	cctttattaa	aaaagattca	gaacgaat
3081	aacgcgaaac	tcataacaca	aagcatgtat	ttgaaagata	caagaataga	aattgtcggg	gtgaataa
3151	aagaccact	tcaatatgct	gaagcaattg	acaaacttgt	aagttctggt	tcatttacaa	ggaatgag
3221	gcggatttat	ttaggtgaag	aacctcaga	caactcctgaa	ttagacgaat	acctgattac	taaaaact
3291	gaaaaagcta	acagtgggtga	aaatgatgaa	aaagaaaaag	atgaaaaaac	tttgaaaagt	ggtgatga
3361	attgaaagcg	agattaaagg	cgatcatcgt	tccaacgaag	ataaatgggt	ttacgaattg	cttggtat
3431	attcgacttg	tcctaaagat	gttttaacac	aactagaatt	tagtgatgaa	gatgttgata	ttataatt
3501	ctcaaatggg	ggtaacctag	tagctggtag	tgaaatatat	acacatttaa	gagctcataa	aggcaaaag
3571	aatgttcgta	tcacagcaat	agcagcaagt	gcggcatcgc	ttatcgcaat	ggctggtgac	cacatcga
3641	tgagtccggg	tgctagaatg	atgattcaca	atccttcaag	tattgcgcaa	ggagaagtga	aagatcta
	tcatgctgca	gaaacattag	aacatgtttg	tcaataaatg	gctgaggcat	atgcggttag	agctggta

# Table 3

## 77ORF017 sequence

SEQ ID NO. 4/SEQ ID NO. 18

```

23982 atgacgcataatatagaaaaacgcattaataaattaaaaacttct
1   M T H N I E K R I N K L K T S
23937 ggaaatccaaaatttataaaaagttagattcagatattcactattta
16  G N P K F K K L D S D I H Y L
23892 ctcaagagatttgaaggtgaaaaaaaccataaagggttttatcca
31  L K R F E G E K N H K G F Y P
23847 aagtttaaaacaaggagaaatagttttttagatttcggtataaac
46  K F K Q G E I V F V D F G I N
23802 gttaataaagaatttttctaattcacactttgcaatagtgatgaat
61  V N K E F S N S H F A I V M N
23757 aaaaatgattctaatacggaggatatagtaaatgttattccctta
76  K N D S N T E D I V N V I P L
23712 tcctctaagaaaaacaaaaagttatttaaagatgaattttgatttg
91  S S K E N K K Y L K M N F D L
23667 aaatgggagtattatttaagattgtttttaatttaattagcgcg
106 K W E Y Y L R L F L N L I S A
23622 caaaataattcagctatatataaaagaagttttcgataaaaaatac
121 Q N N S A I L K E V F D K K Y
23577 caaaaaaacacacagaattcatcactaaagattattttattgaa
136 Q K N N T E F I T K D Y F I E
23532 tttatatctgatagtttagaaattgaaaataaattaaataaaatt
151 F I S D S L E I E N K L N K I
23487 gacagaaacattaataacatagtatcagcaattgataaggtaaaa
166 D R N I N N I V S A I D K V K
23442 aaattaaaaggtaatagtttacgcttgcataaattctttccagccg
181 K L K G N S Y A C I N S F Q P
23397 attagtaagtttcgcataagaaaagttttacccccaaaaattaaa
196 I S K F R I R K V L P Q K I K
23352 aatccagtaatagattcttcggatattatgttactgataaataga
211 N P V I D S S D I M L L I N R
23307 attaataataatatattgcagatccctgatataagatga 23269
226 I N N N I L Q I P D I R *

```

# **Physico-chemical parameters of ORF 77ORF017**

SEQ ID NO. 18

1 MTHNIEKRIN KLKTSGNPKF KKLDSDIHYL LKRFEGEKNH KGFYPKFKQG EIVFVDFGIN  
61 VNKEFSNSHF AIVMNKNSN TEDIVNVIPL SSKENKKYLK MNFDLKWEYY LRLFLNLISA  
121 QNNSAILKEV FDKKYQKNNT EFITKDYFIE FIDSLEIEN KLNKIDRNIN NIVSAIDKVK  
181 KLGNSYACI NSFQPISKFR IRKVLPQKIK NPVIDSSDIM LLINRINNNI LQIPDIR

Number of amino acids: 237  
Average molecular weight (Daltons): 27887.38  
Mean amino acid weight (Daltons): 117.67  
Monoisotopic molecular weight (Daltons): 27869.83  
Mean amino acid monoisotopic weight (Daltons): 117.59

## **Amino acid composition**

Acid	Symbol	Number	%	Average % in Swissprot	Acid	Symbol	Number	%	Average % in Swissprot
Ala	A	5	2.11%	7.58%	Cys	C	1	0.42%	1.66%
Asp	D	14	5.91%	5.28%	Glu	E	13	5.49%	6.37%
Phe	F	16	6.75%	4.09%	Gly	G	6	2.53%	6.84%
His	H	4	1.69%	2.24%	Ile	I	29	12.24%	5.81%
Lys	K	33	13.92%	5.95%	Leu	L	19	8.02%	9.42%
Met	M	4	1.69%	2.37%	Asn	N	30	12.66%	4.45%
Pro	P	7	2.95%	4.9%	Gln	Q	6	2.53%	3.97%
Arg	R	8	3.38%	5.16%	Ser	S	17	7.17%	7.12%
Thr	T	5	2.11%	5.67%	Val	V	11	4.64%	6.58%
Trp	W	1	0.42%	1.23%	Tyr	Y	8	3.38%	3.18%

Number of acidic (negative) amino acids (ED): 27 11.39%  
Number of basic (positive) amino acids (KR): 41 17.30%  
Total charge (KRED): 68 28.69%  
Net charge (KR - ED): 14 5.91%  
Theoretical pI: 10.01  
Total linear charge density: 0.30  
Average hydrophobicity: -5.37  
Ratio of hydrophilicity to hydrophobicity: 1.41  
Percentage of hydrophilic amino acid: 57.81%  
Percentage of hydrophobic amino acid: 42.19%  
Ratio of %hydrophilic to %hydrophobic: 1.37

# 77ORF019 sequence

SEQ ID NO. 5/SEQ ID NO. 19

```
39851 atgaacgagcaaataataggaagcatatatacttttagcaggaggt
1   M N E Q I I G S I Y T L A G G
39896 gttgtgctttatttcagttaaagagatttttaggtattttacagat
16  V V L Y S V K E I F R Y F T D
39941 tctaacttacaacgtaaaaaaatcaatttagaacaatatatccg
31  S N L Q R K K I N L E Q I Y P
39986 atatatttagattgttttaaaaaggctaaaaagatgattggagct
46  I Y L D C F K K A K K M I G A
40031 tatattattccaacagaaacagcatgaatttttagatttttttgat
61  Y I I P T E Q H E F L D F F D
40076 attgaagtctttaataatttagataagcaaagtaaaaaagcgtat
76  I E V F N N L D K Q S K K A Y
40121 gaaaatgttattggatttagacaaatgattaatttatcaaataga
91  E N V I G F R Q M I N L S N R
40166 gttaaggcaatggaagattttaagatgagtttcaacaatgaattt
106 V K A M E D F K M S F N N E F
40211 agtacaaatcagattttttttaatccttcttttgttatggaaaca
121 S T N Q I F F N P S F V M E T
40256 attgctattataaatgaatatcaaaaagatatatcttattttaaaa
136 I A I I N E Y Q K D I S Y L K
40301 aatataattaataaaaatgaatgaaaatagagcttataatcatatt
151 N I I N K M N E N R A Y N H I
40346 gatagttttatcacttcagagtaccgacgaaaaataaacgattat
166 D S F I T S E Y R R K I N D Y
40391 aatctttatcttgataaatttgaagaacagtttagtcaaaaagttt
181 N L Y L D K F E E Q F S Q K F
40436 aaaataaacagaacttcgataaaaagaaagaattattattaattta
196 K I N R T S I K E R I I I N L
40481 aacaagaggagattttaaata 40501
211 N K R R F K *
```

# Physico-chemical parameters of ORF 77ORF019

SEQ ID NO. 19

```

1      MNEQIGSIY TLAGGVVLYS VKEIFRYFTD SNLQRKKINL EQIYPIYLDG FKKAKKMIGA
61     YIIPTEQHEF LDDFDIEVFN NLDKQSKKAY ENVIGFRQMI NLSNRVKAME DFKMSFNNEF
121    STNQIFFNPS FVMETIAIIN EYQKDISYK NIINKMNENR AYNHIDSFIT SEYRRKINDY
181    NLYLDKFEEQ FSQKFKNRT SIKERIIINL NKRRFK
    
```

Number of amino acids: 216  
 Average molecular weight (Daltons): 26026.06  
 Mean amino acid weight (Daltons): 120.49  
 Monoisotopic molecular weight (Daltons): 26009.34  
 Mean amino acid monoisotopic weight (Daltons): 120.41

## Amino acid composition

Acid	Symbol	Number	%	Average % in Swissprot	Acid	Symbol	Number	%	Average % in Swissprot
Ala	A	7	3.24%	7.58%	Cys	C	1	0.46%	1.66%
Asp	D	10	4.63%	5.28%	Glu	E	16	7.41%	6.37%
Phe	F	19	8.80%	4.09%	Gly	G	5	2.31%	6.84%
His	H	2	0.93%	2.24%	Ile	I	28	12.96%	5.81%
Lys	K	22	10.19%	5.95%	Leu	L	12	5.56%	9.42%
Met	M	7	3.24%	2.37%	Asn	N	23	10.65%	4.45%
Pro	P	3	1.39%	4.9%	Gln	Q	10	4.63%	3.97%
Arg	R	11	5.09%	5.16%	Ser	S	13	6.02%	7.12%
Thr	T	7	3.24%	5.67%	Val	V	7	3.24%	6.58%
Trp	W	0	0.00%	1.23%	Tyr	Y	13	6.02%	3.18%

Number of acidic (negative) amino acids (ED): 26 12.04%  
 Number of basic (positive) amino acids (KR): 33 15.28%  
 Total charge (KRED): 59 27.31%  
 Net charge (KR - ED): 7 3.24%  
 Theoretical pI: 9.52  
 Total linear charge density: 0.28  
 Average hydrophobicity: -4.84  
 Ratio of hydrophilicity to hydrophobicity: 1.37  
 Percentage of hydrophilic amino acid: 54.17%  
 Percentage of hydrophobic amino acid: 45.83%  
 Ratio of %hydrophilic to %hydrophobic: 1.18

# 77ORF043 sequence

SEQ ID NO. 6/SEQ ID NO. 21

```
29304 atgtattacgaaataggcgaaatcatacgcaaaaatattcatggt
1   M Y Y E I G E I I R K N I H V
29349 aacggattcgattttaagctattcatttttaaagggtcatatgggc
16  N G F D F K L F I L K G H M G
29394 atatcaatacaagttaaagatatgaacaacgtaccaattaaacat
31  I S I Q V K D M N N V P I K H
29439 gcttatgtcgtagatgagaatgacttagatatggcatcagactta
46  A Y V V D E N D L D M A S D L
29484 ttttaaccaagcaatagatgaatggattgaagagaacacagacgaa
61  F N Q A I D E W I E E N T D E
29529 caggacagactaattaacttagtcatgaaatggtag 29564
76  Q D R L I N L V M K W *
```

# Physico-chemical parameters of ORF 77ORF043

SEQ ID NO. 21

1 MYEIGEIIIR KNIHVNGFDF KLFILKGHMG ISIQVKDMNN VPIKHAYVVD ENLDLMASDL  
61 FNQAIDEWIE ENTDEQDRLI NLVMKW

Number of amino acids: 86  
Average molecular weight (Daltons): 10186.68  
Mean amino acid weight (Daltons): 118.45  
Monoisotopic molecular weight (Daltons): 10180.02  
Mean amino acid monoisotopic weight (Daltons): 118.37

## Amino acid composition

Acid	Symbol	Number	%	Average % in Swissprot	Acid	Symbol	Number	%	Average % in Swissprot
Ala	A	3	3.49%	7.58%	Cys	C	0	0.00%	1.66%
Asp	D	9	10.47%	5.28%	Glu	E	7	8.14%	6.37%
Phe	F	4	4.65%	4.09%	Gly	G	4	4.65%	6.84%
His	H	3	3.49%	2.24%	Ile	I	11	12.79%	5.81%
Lys	K	6	6.98%	5.95%	Leu	L	6	6.98%	9.42%
Met	M	5	5.81%	2.37%	Asn	N	8	9.30%	4.45%
Pro	P	1	1.16%	4.9%	Gln	Q	3	3.49%	3.97%
Arg	R	2	2.33%	5.16%	Ser	S	2	2.33%	7.12%
Thr	T	1	1.16%	5.67%	Val	V	6	6.98%	6.58%
Trp	W	2	2.33%	1.23%	Tyr	Y	3	3.49%	3.18%

Number of acidic (negative) amino acids (ED): 16 18.60%  
Number of basic (positive) amino acids (KR): 8 9.30%  
Total charge (KRED): 24 27.91%  
Net charge (KR - ED): -8 -9.30%  
Theoretical pI: 4.38  
Total linear charge density: 0.30  
Average hydrophobicity: -2.80  
Ratio of hydrophilicity to hydrophobicity: 1.19  
Percentage of hydrophilic amino acid: 48.84%  
Percentage of hydrophobic amino acid: 51.16%  
Ratio of %hydrophilic to %hydrophobic: 0.95

**77ORF102 sequence**

SEQ ID NO. 7/SEQ ID NO. 23

```
29051 atgagcaacatttataaaaagctacctagtagcagtattatgcttc
1    M S N I Y K S Y L V A V L C F
29096 acagtcttagcgattgtacttatgccgtttctatacttcactaca
16   T V L A I V L M P F L Y F T T
29141 gcatggtcaattgcgggattcgcaagtatcgcaacattcatgtac
31   A W S I A G F A S I A T F M Y
29186 tacaaagaatgctttttcaaagaataa 29212
46   Y K E C F F K E *
```



## Physico-chemical parameters of ORF 77ORF102

SEQ ID NO. 23

1 MSNIYKSYLV AVLCTVLAI VLMPFLYFTT AWSIAGFASI ATFMYYKECF FKE

Number of amino acids: 53  
Average molecular weight (Daltons): 6155.42  
Mean amino acid weight (Daltons): 116.14  
Monoisotopic molecular weight (Daltons): 6151.07  
Mean amino acid monoisotopic weight (Daltons): 116.06

### Amino acid composition

Acid	Symbol	Number	%	Average % in Swissprot	Acid	Symbol	Number	%	Average % in Swissprot
Ala	A	6	11.32%	7.58%	Cys	C	2	3.77%	1.66%
Asp	D	0	0.00%	5.28%	Glu	E	2	3.77%	6.37%
Phe	F	7	13.21%	4.09%	Gly	G	1	1.89%	6.84%
His	H	0	0.00%	2.24%	Ile	I	4	7.55%	5.81%
Lys	K	3	5.66%	5.95%	Leu	L	5	9.43%	9.42%
Met	M	3	5.66%	2.37%	Asn	N	1	1.89%	4.45%
Pro	P	1	1.89%	4.9%	Gln	Q	0	0.00%	3.97%
Arg	R	0	0.00%	5.16%	Ser	S	4	7.55%	7.12%
Thr	T	4	7.55%	5.67%	Val	V	4	7.55%	6.58%
Trp	W	1	1.89%	1.23%	Tyr	Y	5	9.43%	3.18%

Number of acidic (negative) amino acids (ED): 2 3.77%  
Number of basic (positive) amino acids (KR): 3 5.66%  
Total charge (KRED): 5 9.43%  
Net charge (KR - ED): 1 1.89%  
Theoretical pI: 8.18  
Total linear charge density: 0.13  
Average hydrophobicity: 10.81  
Ratio of hydrophilicity to hydrophobicity: 0.40  
Percentage of hydrophilic amino acid: 28.30%  
Percentage of hydrophobic amino acid: 71.70%  
Ratio of %hydrophilic to %hydrophobic: 0.39

**77ORF104 sequence**

SEQ ID NO. 8/SEQ ID NO. 25

34393 atggtaaccaaagaatttttaaaaactaaacttgagtgttcagat

1 M V T K E F L K T K L E C S D

34438 atgtacgctcagaaactcatagatgaggcacagggcgatgaaaat

16 M Y A Q K L I D E A Q G D E N

34483 aggttgtagcagacctatctatccaaaaacttgacagaacgcataca

31 R L Y D L F I Q K L A E R H T

34528 cgccccgctatcgctcgaatattaa 34551

46 R P A I V E Y \*

## Physico-chemical parameters of ORF 77ORF104

SEQ ID NO. 25

1 MVTKEFLKTK LECSDMYAQK LIDEAQGDEN RLYDLFIQKL AERHTRPAIV EY

Number of amino acids: 52  
Average molecular weight (Daltons): 6193.13  
Mean amino acid weight (Daltons): 119.10  
Monoisotopic molecular weight (Daltons): 6189.12  
Mean amino acid monoisotopic weight (Daltons): 119.02

### Amino acid composition

Acid	Symbol	Number	%	Average % in Swissprot	Acid	Symbol	Number	%	Average % in Swissprot
Ala	A	4	7.69%	7.58%	Cys	C	1	1.92%	1.66%
Asp	D	4	7.69%	5.28%	Glu	E	6	11.54%	6.37%
Phe	F	2	3.85%	4.09%	Gly	G	1	1.92%	6.84%
His	H	1	1.92%	2.24%	Ile	I	3	5.77%	5.81%
Lys	K	5	9.62%	5.95%	Leu	L	6	11.54%	9.42%
Met	M	2	3.85%	2.37%	Asn	N	1	1.92%	4.45%
Pro	P	1	1.92%	4.9%	Gln	Q	3	5.77%	3.97%
Arg	R	3	5.77%	5.16%	Ser	S	1	1.92%	7.12%
Thr	T	3	5.77%	5.67%	Val	V	2	3.85%	6.58%
Trp	W	0	0.00%	1.23%	Tyr	Y	3	5.77%	3.18%

Number of acidic (negative) amino acids (ED): 10 19.23%  
Number of basic (positive) amino acids (KR): 8 15.38%  
Total charge (KRED): 18 34.62%  
Net charge (KR - ED): -2 -3.85%  
Theoretical pI: 5.03  
Total linear charge density: 0.38  
Average hydrophobicity: -5.81  
Ratio of hydrophilicity to hydrophobicity: 1.47  
Percentage of hydrophilic amino acid: 53.85%  
Percentage of hydrophobic amino acid: 46.15%  
Ratio of %hydrophilic to %hydrophobic: 1.17

# **77ORF182 sequence**

SEQ ID NO. 9/SEQ ID NO. 27

```
29268 atgttcaatataaaacgaaaaacggaggaagtcaagatgtattac
1   M F N I K R K T E E V K M Y Y
29313 gaaataggcgaaatcatacgcaaaaatattcatgttaacggattc
16  E I G E I I R K N I H V N G F
29358 gattttaagctattcatttttaaaggtcatatgggcatatcaata
31  D F K L F I L K G H M G I S I
29403 caagttaaagatatgaacaacgtaccaattaaacatgcttatgtc
46  Q V K D M N N V P I K H A Y V
29448 gtagatgagaatgacttagatatggcatcagacttatttaaccaa
61  V D E N D L D M A S D L F N Q
29493 gcaatagatgaatggattgaagagaacacagacgaacaggacaga
76  A I D E W I E E N T D E Q D R
29538 ctaattaacttagtcatgaaatggtag 29564
91  L I N L V M K W *
```

## Physico-chemical parameters of ORF 77ORF182

SEQ ID NO. 27

1 MFNIKRKTEE VKMYEIGEI IRKNIHVNGF DFKLFILKGH MGISIQVKDM NNVPIKHAYV  
61 VDENDLDMAS DLFNQAIDew IEENTDEQDR LINLVMKW

Number of amino acids: 98  
Average molecular weight (Daltons): 11691.50  
Mean amino acid weight (Daltons): 119.30  
Monoisotopic molecular weight (Daltons): 11683.84  
Mean amino acid monoisotopic weight (Daltons): 119.22

### Amino acid composition

Acid	Symbol	Number	%	Average % in Swissprot	Acid	Symbol	Number	%	Average % in Swissprot
Ala	A	3	3.06%	7.58%	Cys	C	0	0.00%	1.66%
Asp	D	9	9.18%	5.28%	Glu	E	9	9.18%	6.37%
Phe	F	5	5.10%	4.09%	Gly	G	4	4.08%	6.84%
His	H	3	3.06%	2.24%	Ile	I	12	12.24%	5.81%
Lys	K	9	9.18%	5.95%	Leu	L	6	6.12%	9.42%
Met	M	6	6.12%	2.37%	Asn	N	9	9.18%	4.45%
Pro	P	1	1.02%	4.9%	Gln	Q	3	3.06%	3.97%
Arg	R	3	3.06%	5.16%	Ser	S	2	2.04%	7.12%
Thr	T	2	2.04%	5.67%	Val	V	7	7.14%	6.58%
Trp	W	2	2.04%	1.23%	Tyr	Y	3	3.06%	3.18%

Number of acidic (negative) amino acids (ED): 18 18.37%  
Number of basic (positive) amino acids (KR): 12 12.24%  
Total charge (KRED): 30 30.61%  
Net charge (KR - ED): -6 -6.12%  
Theoretical pI: 4.76  
Total linear charge density: 0.33  
Average hydrophobicity: -3.89  
Ratio of hydrophilicity to hydrophobicity: 1.28  
Percentage of hydrophilic amino acid: 51.02%  
Percentage of hydrophobic amino acid: 48.98%  
Ratio of %hydrophilic to %hydrophobic: 1.04